

Overview of the Technology Track Topics for the Winter 2007 ESIP Federation Meeting

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Technology Tracks

- Web Services Chaining - Brian Wilson
- Semantic Web/Understanding/Technologies - Peter Fox/Rob Raskin
- Data Quality - Rob Raskin/Bruce Barkstrom
- User Interface/Visualization - Karl Benedict/Bruce Caron

No additional notes ...

Track Goals

- Near Term - technology infusion into application areas for problem-focused technology demonstrations in the application or technical track sessions at the Winter meeting.
- Mid-term - develop collaborations that will lead to new proposals and initiatives
- Strategy
 - Alternating application area and technical track sessions
 - Build from session to session an understanding of alignment between available technologies and emerging application areas

Regarding the role of the technology tracks within the overall meeting, the goal is to infuse Federation technologies into the application areas in such a way that they may be deployed in the near term into problem-focused technical demonstrations related to key problems identified by the application clusters. In the mid-to-long term, the goal is to develop new application/technology collaborations that will lead to proposals and new initiatives that leverage the scientific and technical strengths of the Federation in addressing the science area and application needs for societal benefits.

To achieve these goals, the structure of the meeting is somewhat different from previous years, but retains a strong technical focus. Specifically, instead of dedicated technical tracks throughout the entire meeting, alternating application area and technical track sessions are scheduled to facilitate interaction between the application area teams and the technical groups that otherwise have not interacted due to the parallel structure of previous meetings. The hope is that these interactions will help to identify opportunities for technology development and deployment in support of high-priority problems identified by the application clusters.

Track Outline

- Application Working Group Demos and Approaches (each cluster in sequence) - application area demonstrations and definition of key problem areas
- Technical Workshop Sessions (four tracks in parallel) - technology demonstrations and initial linkages to key problem areas
- Application Working Group Breakouts (parallel) - focus on emerging application area/technology linkages
- Technical Workshop Sessions (parallel) - focus on key cross-application technical solutions and collaboration plan development
- Gaps and Next Steps (all in one room) - what is missing, still needs to be considered?

1/3/07 10:45-3:15 Application Working Group Demos and Approaches (each cluster in sequence)
Demonstrate existing technologies in development within the application working groups and define key science/applications problems within each cluster. Outline current thinking of how Federation technologies may be applied in service to those problems.

1/3/07 3:45-5:45 Technical Workshop Sessions (four tracks in parallel)
Demonstrate existing state-of-the-art of technology teams within the Federation. Engage in discussion among application cluster and technology track attendees to begin process of linking technical capabilities with identified high-priority science/application needs. Ideally, the demonstrations will be brief, and leave sufficient time for dialog about future potential deployment of technologies into application areas.

1/4/07 8:30-10:30 Application Working Group Breakouts (parallel)
Focus discussion of how key needs of the application areas may be met with technologies demonstrated the previous afternoon. Address question of how current working group member initiatives may be facilitated through collaboration with new technology partners.

1/4/07 10:45-12:15 Technical Workshop Sessions (parallel)
Identify cross-application technical solutions and develop collaboration plans for continued work after the meeting

1/4/07 3:00-5:15 Gaps and Next Steps (all in one room) Work to identify needed capabilities not demonstrated by the technical and application working groups. What additional key technologies are not being addressed by the current suite of Federation focus areas? What additional (sociological, financial, logistic, etc.) barriers must be overcome to develop complete solutions to

the problems identified by the application clusters?

Web Services Chaining

Web services chaining represents the most visible group of Federation technology activities with demonstrations of individual web services having been provided at several past meetings and chains representing the sequential linkage (and definition of those linkages) having been demonstrated at the past two Federation meetings. Key technologies and standards that play a role in this area include:

- OGC Web Service Specifications (WxS)
- Simple Object Access Protocol (SOAP) Services
- Representational State Transfer (REST)
- Business Process Execution Language
- SciFlow

Semantic Web/Understanding/Technologies

From the W3C

The Semantic Web is about two things. It is about common formats for interchange of data, where on the original Web we only had interchange of documents. Also it is about language for recording how the data relates to real world objects. That allows a person, or a machine, to start off in one database, and then move through an unending set of databases which are connected not by wires but by being about the same thing.

Key technologies include:

- Resource Description Framework (RDF)
- Web Ontology Language (OWL)
- Semantic Web for Earth and Environmental Terminology (SWEET)

Data Quality

As demand for Earth Science data products and services increases, and that demand includes delivery of those products and services to users less familiar with the nuances of data quality that are inherent in these data, systematic methods of encoding and representing data quality must be developed. These representations of quality must be consistent, accessible, and understandable to the user communities that rely upon Earth Science data. These quality metadata are most commonly encoded in data metadata, but may also be encoded in other ways (e.g. using semantic tagging within data files).

User Interface/Visualization

The user interfaces presented to consumers of data and information are the final link in the value chain that begins with data acquisition, proceeds through modeling and data fusion, and finishes with the delivery of information to decision makers. The recent emergence of new models of information delivery over the web has provided widely accessible data visualization and delivery tools to information users. These capabilities complement the continuing use of desktop application and hardcopy information delivery methods. Key technologies in this area include:

- Web-service aware desktop applications (e.g. Matlab, ArcGIS)
- Responsive, standards-based web applications (e.g. Ajax applications)
- XML applications that support deployment into multiple delivery pipelines (e.g. XML + XSLT = HTML/LaTEX/SVG etc.)